

^{137}Cs , K, Rb and Cs in a *Sphagnum*-dominated peatland in eastern central Sweden

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Within this study we investigated the vertical distribution of ^{137}Cs activity concentrations in peat soil profiles and vascular plants as well as distribution of ^{137}Cs , K, Rb and Cs within individual *Sphagnum* plants, growing on a peatland in eastern central Sweden. Two sites were studied: an open bog (area with no trees and only a few sparsely growing plant species) and a low pine (located about 100 metres from the open bog site and had slowly growing Scots pine). Ground deposition of ^{137}Cs in 2005 was similar at both sites, 23 000 Bq m⁻². There was a difference in distribution of ^{137}Cs activity within peat soil profiles: at the open bog a clear peak in the uppermost 1-4 cm of *Sphagnum* layers whereas at the low pine site ^{137}Cs was mainly located in deeper (10-12 cm) layers. The migration rate of ^{137}Cs was 0.57 cm yr⁻¹ at the open bog site and the migration centre was at a depth of 10.7, while the rate at the low pine site was 0.78 cm yr⁻¹ and the migration centre was at 14.9 cm, suggesting an upward transport of caesium in the open bog peat profile. Among vascular plants ^{137}Cs was found mainly located within green parts (heather, *Calluna vulgaris*), within roots (rosemary, *Andromeda polifolia*, hare's-tail cotton grass *Eriophorum vaginatum* and cranberry *Vaccinium oxycoccos*) or showed variable distribution within the plant (e.g. *Carex rostrata* and bog bean *Menyanthes trifoliata*). Heather and cranberry showed obvious decreases in ^{137}Cs activity concentrations over the 15-18 years since the Chernobyl fallout while activity in other plants remained for the most part unchanged. ^{137}Cs activity concentration and concentrations of K, Rb and Cs concentrations were usually highest in the capitula and/or in the subapical segments and lowest in the lower dead segments. ^{137}Cs activity concentrations in *Sphagnum* well correlated with concentrations of Rb and stable Cs while only weak correlations were found between ^{137}Cs and K. This paper will provide new information on ^{137}Cs and alkali metals behaviour in *Sphagnum*-dominated peatland.